

tok

Corporate Profile 2024



TOKYO OHKA KOGYO CO., LTD.

Respond with the Power of Chemistry

Not so long ago, talking to someone in a distant place via a “video phone” with a palm-size display was only possible in spy movies or animated films. But science has made such “dreamlike story” possible in the real world.

Computers can be made smaller with higher performance and more functions if more transistors can be placed on a microscopic space on a semiconductor chip.

Manufacturers of the cutting-edge semiconductors have been trying to achieve an “atomic-level dreamlike goal” to develop a microscopic circuit which is one hundred-thousandth the width of a human hair, with a view to advancing AI and communication technology, which should become keys to solve serious social issues such as global warming and to expand human dreams including space travel.

TOKYO OHKA KOGYO (hereinafter, “TOK”) has worked on realizing “dreams” of the semiconductor industry through the “Power of Chemistry” using its world-leading high purification technology and microprocessing technology cultivated over the years.

TOK will continue to meet expectations of customers and society with the “Power of Chemistry.”



To provide products that no one else can imitate.

Inheriting the spirit of the company since its foundation to become "The e-Material Global Company™".

With the challenge of continuous change, we will continue to Boost up!!

TOK will continue to evolve to alternate dimension.

Contributing to the development of society as a high-purity chemical manufacturer by delivering high value-added products

In 1936, TOK started as a chemical manufacturer that develops and manufactures high-purity chemicals. Since then, under the management policy since its foundation to “demonstrate an overwhelming presence by mastering technological capabilities even if the market size is small,” TOK entered into such fields as high-performance printing materials and panel materials. Since the late 1960’s, it has grown as a chemical manufacturer that provides microprocessing materials such as photoresists that play a key role in the semiconductor manufacturing process, together with domestic and overseas semiconductor and electronics industries.

Establishment~1967

Built a foundation based on high purification technology

Started production of high-purity “caustic potash” that supported the “coal industry,” one of the pillars of the post-war recovery

In 1936, TOK became the first Japanese company to produce caustic potash (potassium hydroxide) which was cheaper than and superior to imported ones. After the world war 2. TOK, as the only domestic manufacturer, preferentially received electricity supply that was often scarce at that time and produced refined caustic potash as electrolyte for batteries used in hard hat lights for coal miners, as an alternative to hazardous sulfuric acid. TOK further honed its refining technology and started exporting the “world’s highest-purity” potassium hydroxide to the world in 1964.

The Corporate Presentation video is available.



Contributed to the explosive proliferation of “TVs” with “Ohkaseal” high-purity potassium silicate

Developed made-in-Japan CRT phosphor bonding which received a high evaluation from overseas top brand manufacturers including RCA (the U.S.) and Phillips (the Netherlands).

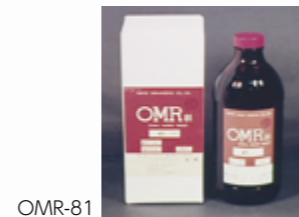


Crowds around the street television in front of Shibuya Station (around 1954)

1968~1979

Entered into the semiconductor manufacturing field

In 1968, TOK developed “Ohkalight,” cyclized rubber-based photosensitive resin. Based on that technology, TOK developed “OMR-81” and made a full-scale entry into the semiconductor manufacturing field to become known as “TOK, the photoresists specialist.”



OMR-81

● (1968) Negative tone photoresist for semiconductors [OMR-81]

Adopted by domestic and overseas manufacturers as the cutting-edge photoresists with superior adhesiveness

● (1971) Synthetic rubber photoresist [OMR-83]

Remained as a mainstream photoresist for semiconductor manufacturing until 1979

● (1972) Positive tone photoresist for semiconductors [OFPR series]

The first domestic positive tone photoresist for semiconductor in Japan.

1980~1999

Entered into the LCD manufacturing field

Amid the intensifying market competition in the semiconductor industry, TOK focused on sophistication of microprocessing technology in response to demand for more efficient and higher performance products, and also launched the Equipment Business to enter into new fields including liquid crystal-related products.



TR25000

● (1989) Large-substrate coater line [TR25000]

“Coat & Spin method” developed by TOK became a mainstream of the coating method

● (1975) Non-metal resist developing solution [NMD-3]

TOK’s concentration setting to maintain the optimal sensitivity became the global de facto standard

Deepening of technology

● (1997) KrF chemically-amplified positive tone photoresist [TDUR-P015]

Adopted worldwide and became the de facto standard of this type of photoresists

● (2001) ArF positive tone photoresist [TARF-P series]

Maintained the world’s top-level share in photoresists for the cutting-edge semiconductor manufacturing process

● (2018) EUV (Extreme Ultra violet) photoresist [EUVR series]

Cutting-edge photoresists adopted for full-scale mass production in 2019

2000~Present

“Expansion” of business and “deepening” of technology

TOK meets expectations of customers and society with the power of chemistry by deepening its core technologies with an aim to continue to deliver products corresponding to the sophisticated semiconductors and related manufacturing technologies in a timely manner while expanding its business into markets in which it can take advantage of its core technologies, high purification technology and microprocessing technology.

● (2003) Negative tone photoresistive permanent film [TMMF series]

Permanent film-type photoresists used in forming structures in high-frequency devices, etc.

● (1991) LCD color filter manufacturing pigment dispersion type negative photoresist [CFPR]

Became the first company to adopt “pigment dispersion method” which later became a mainstream in the field

Expansion of business

1982
NEC9801 released

Photo courtesy of ©NEC



1991
PC-9801NC released

Photo courtesy of ©NEC



2007~
Smartphone





TOK's business fields and main products

Present

Offering to a full line-up of products, utilizing the world's most advanced microfabrication technology

TOK Group is a long-established photoresist manufacturer and one of its strengths is its full line-up of products that boast the world's leading market share, including photoresists for EUV/ArF/KrF in the advanced field and g/i-line photoresists in the legacy field. We provide a wide range of materials for the manufacture of a variety of cutting-edge electronic devices, particularly in the semiconductor manufacturing field, where rapidly innovating technology is progressing.

Semiconductor Manufacturing Field

Various chemicals including photoresists, the TOK Group's core products, are used in forming fine wiring and transistors inside semiconductor chips. The TOK group holds a leading market share in semiconductor photoresists in the world.



- g-line/i-line Photoresists
- KrF Excimer Laser Photoresists
- ArF Excimer Laser Photoresists
- EUV (Extreme Ultraviolet) Photoresists
- EB (Electron Beam) Photoresists
- Interlayer Insulating Film
- Diffusing Agents
- Directed Self-Assembly Materials (DSA)
- Materials for Cover Coat
- High-Purity Chemicals

High-Purity Chemicals Field

High purification and its control technologies that we have honed since our founding are leveraged in the manufacturing of high-performance chemicals that are essential for semiconductor manufacturing, etc.

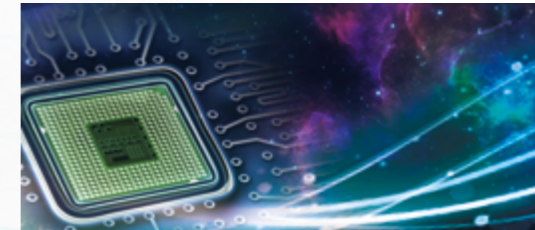


- Advanced Surface Preparation
- Developing Solutions
- Thinner

Semiconductor Packaging Manufacturing Field

Semiconductor manufacturing consists of two processes: a front-end process in which electric circuits including fine transistors are formed, and a back-end process in which semiconductor chips formed in the front-end process are sealed to protect from external shocks and wiring to connect with other electronic components is formed.

The TOK Group's various photoresists and high-purity chemicals also contribute to the evolution of the back-end process of semiconductor manufacturing.



- Bump Photoresists
- Photoresists for RDL
- Adhesive Materials
- High-Purity Chemicals

Image Sensor/MEMS Manufacturing Field

The TOK Group's various products contribute to manufacturing more compact and sophisticated electronic devices including image sensors, key components of smartphone cameras, and BAW filters that is part of antenna.



- Materials for Photosensitive Permanent Films
- Resists for Micro Lens
- Lift-off Resists
- High-Purity Chemicals

*MEMS: Micro Electro Mechanical Systems

New Business Field

We are working to create new values leveraging our core high purification and microprocessing technologies accumulated over the years, in collaboration with domestic and overseas companies, universities, and research institutions.



Panel Manufacturing Field

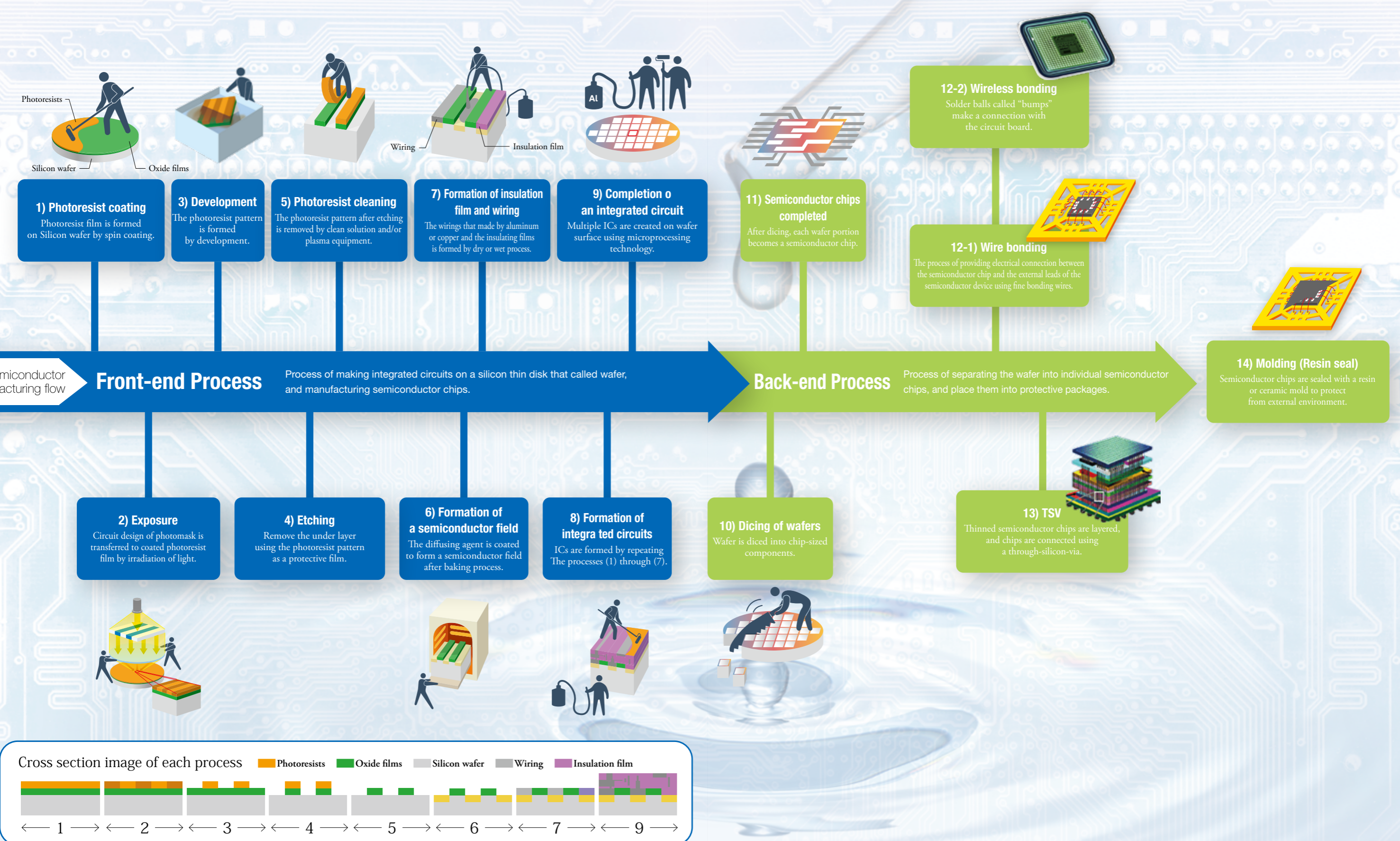
Microprocessing technology honed in the semiconductor manufacturing field is also leveraged in the manufacturing of LCD and OLED displays.



- TFT Resists
- Resists for Color Filters
- Resists for Organic EL
- High-reliability Transparent Materials
- High-Purity Chemicals

Semiconductor manufacturing processes and major products

The TOK Group's products are used in nearly all processes of semiconductor manufacturing.





Toward "TOK's overarching aspiration"

Present ~ Future

Contributing to the realizing a sustainable and abundant society by responding with the power of chemistry

Since its founding, the TOK Group has always focused on "high purity" chemicals and done its best to put into practice its four management principles, evolving along the way. We will continue to follow that path and aim to further grow as a "company meeting expectations of customers and society with the power of chemistry."

The TOK Group is propelling a long-term vision for 2030 called "TOK Vision 2030" that was made by backcasting process considering future business activity. The TOK Group will contribute to creating value in the future through Electronic Material such as the photoresist that is key raw materials in manufacturing semiconductor that create new value, including smartphones, autonomous driving, and remote medical.

Management Principles

- Create a frank and open-minded business culture
- Continue efforts to enhance our technology
- Raise the quality levels of our products
- Contribute to society

Management Vision

"The e-material Global Company™" contributing to a sustainable future through Chemistry

TOK Vision 2030: Overarching Aspiration

- Provide innovation that inspires customers
- Earn trust from stakeholders worldwide
- Provide new added value that inspires customers
- Enhance corporate value sustainably with an aim to contribute to SDGs
- All employees can work lively with pride

Company-Wide Strategies*

- (1) Increase global market share of cutting-edge photoresists
- (2) Acquire and create core technologies in electronic materials and new fields
- (3) Secure stable supply of high-quality products and establish an optimal production system for the Group
- (4) Improve employee engagement and promote people-oriented management
- (5) Build sound and efficient management foundation

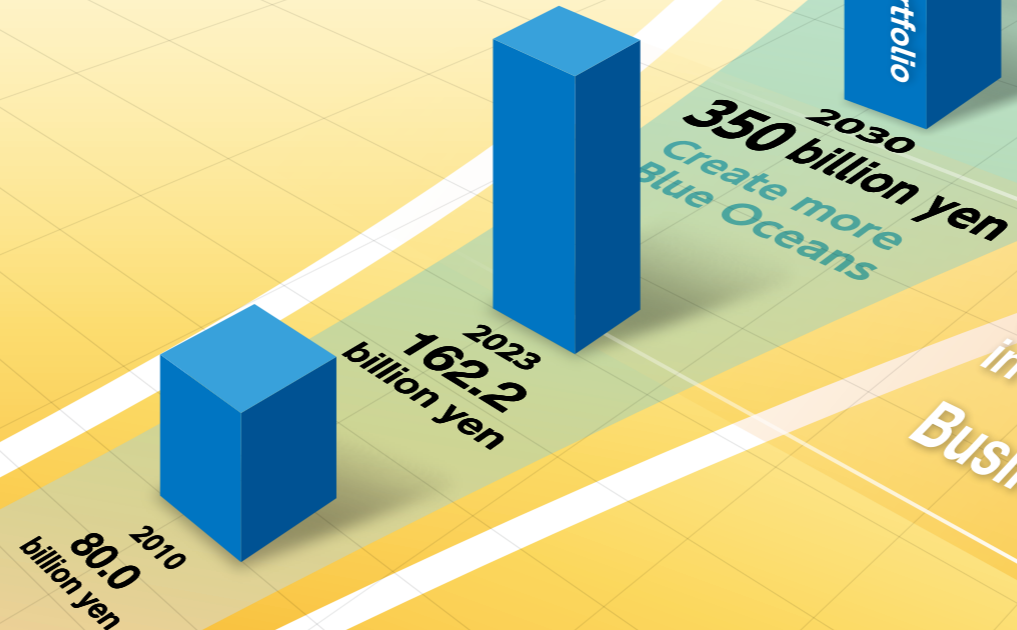
*tok Medium-Term Plan 2024(FY2022-FY2024)



2040 100-Year Company

Future business portfolio (main business)

- Business areas
- Material for semiconductor front end process
 - Material for semiconductor packaging process
 - Display materials
 - High-purity chemicals and more new businesses etc.



Create new businesses with an eye on the business portfolio in 2040
Business expansion through M&A

Strategy of building close relationships with customers through “the trinity”

Close collaboration between R&D, manufacturing, and sales and “high quality products” to meet increasingly challenging expectations from customers

Semiconductors cover a wide variety of products including logic, memory, and image sensors and continue to advance rapidly. In addition, the semiconductor manufacturing process varies depending on customers and the product type. Accordingly, we are required to promptly deliver chemicals, including photoresists and clean solutions, optimized for design and manufacturing process of semiconductors.

To make it possible, we must fully understand what customers need. It is also important to ensure to meet customers’ requests on improvement of product quality which has been becoming more sophisticated year by year.

In order to achieve this, it is essential to have “The trinity collaboration” between R&D, manufacturing and sales, and the TOK Group is strengthening its “R&D” function at its main overseas manufacturing bases, in addition to its main development base, the TOK Technology and Innovation Center (TTIC) (p13-14), as well as its “Manufacturing” function by establishing an extensive manufacturing and inspection system, and is also strengthening its “R&D” function at its main overseas manufacturing bases. The Group is also strengthening its “Manufacturing” function by establishing a well-developed manufacturing and inspection system, and is building a system to meet customers’ requests adequately and promptly.

Thorough quality control 1

“Same level” of inspection.

Photoresist undergoes repeated inspections at each stage of the production process, including “input and mixing of raw materials”, “adjustment and filtration of intermediate products” and “filling and packaging of products”. For example, in the final stage of the product process, the characteristics of the photoresist are inspected in manufacturing facilities and environments that are “at the same level” as those used in the manufacture of semiconductors at the customer’s site, to ensure that the characteristics are at the level required by the customer.

The TOK Group has also established a strict quality control system at each of its production sites in order to meet the demands for improved product quality, which are becoming increasingly sophisticated.

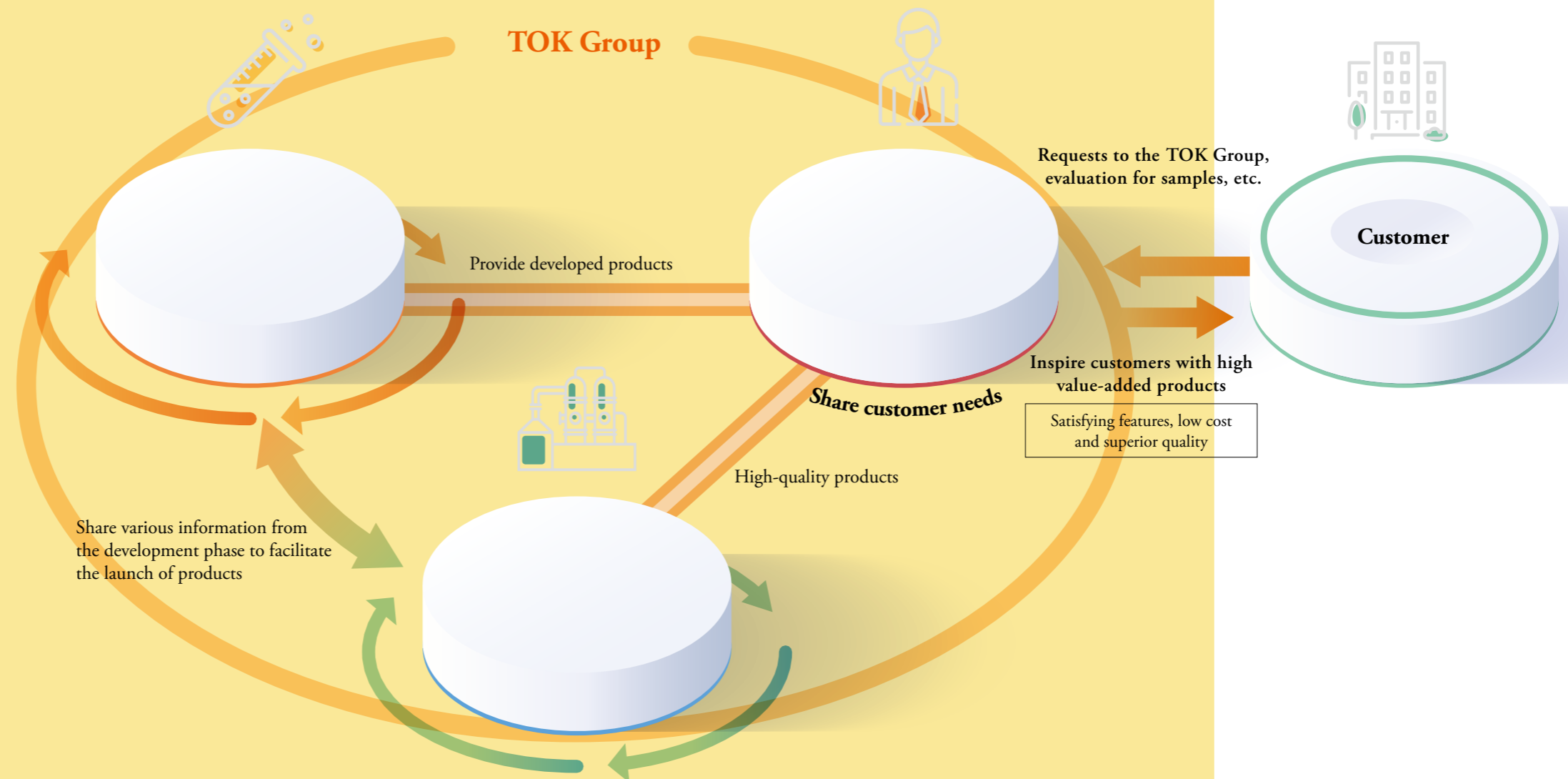


Photoresist patterning process

Manufacturing by the TOK Group

Development flow under “the trinity” to meet needs

The TOK Group’s manufacturing is based on the solid technical skills supported by the frank and open-minded corporate culture enabling “collaboration across any boundaries if necessary”.



Thorough quality control 2

Thorough eliminate contamination

Our biggest concern in the manufacturing process is contamination. It is absolutely unacceptable to click a knock-type ballpoint pen inside a clean room. In the manufacturing sites of the cutting-edge semiconductors with the minimum linewidth of 10nm, contamination such as “one drop of coffee in a 50-meter Olympic size swimming pool” is not allowed.

In order to meet these stringent requirements, TOK’s manufacturing sites are strengthening and thoroughly implementing measures both in terms of equipment, such as various filtration systems and the installation of clean rooms at the highest level, and in terms of employee training.



Example of a filtration process (filtering)

Promotion of global strategy

“To deliver the best products and service to local customers promptly at any site around the world”

The TOK Group has expanded globally as the market structure changes, and the overseas sales ratio now exceeds 75% every year. In our overseas sites, locally hired employees have been showing steady improvement in their skills year by year under the adequate training system, and more and more overseas subsidiaries are actively promoting excellent human capital, even for executive positions, to delegate management functions.

In order to “deliver the best products and service to local customers promptly at any site around the world,” with the level of difficulty in developing products increasing every year, the TOK Group is working to further strengthen collaboration within the Group and develop global personnel.

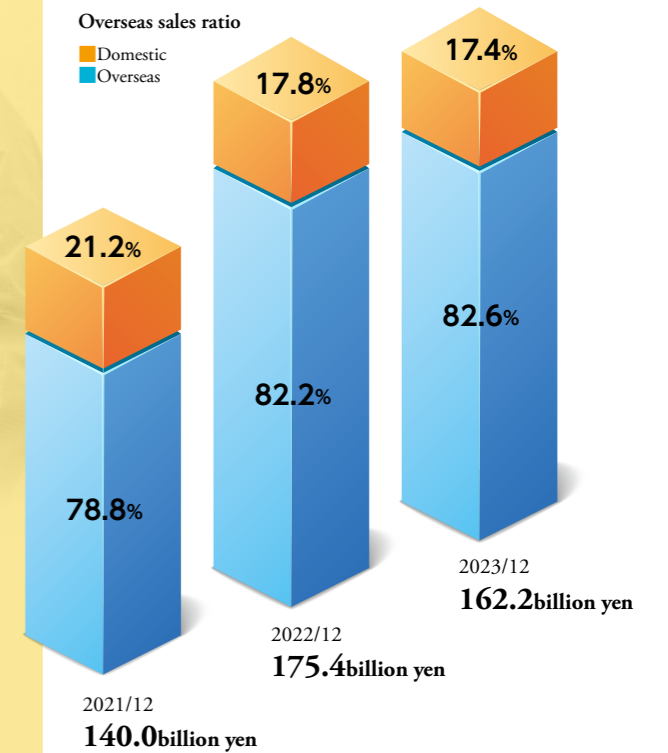


R&D sites of the TOK Group



Human capital development at the TOK Group

Since its founding, employees have been the greatest asset of the TOK Group. The Company’s human capital policy is based on the following “five principles,” derived from its long-held philosophy that “human capital are a company asset.”: “Business always starts with people,” “Any discrimination is strictly prohibited,” “Ensure fair and equal compensation,” “Educate personnel and promote creativity,” and “Personnel systems emphasizing and ensuring transparency.” And, the TOK Group is focusing on the development of human capital who is “Strengthen human capital who can perform research, make decisions, and take actions on their own initiative”. Under the active participation of the administration, TOK Group is creating a curriculum that can learn new and gain various experiences through employee training.



Manufacturing sites of the TOK Group



Creation of new social value

Top-level technological capabilities cultivated are utilised to reduce risks associated with business activities and to solve social issues facing humanity.

United Nation's "2030 Agenda" appealing for "End poverty in all its forms everywhere" encourages companies to tackle serious issues faced by the earth and human race as "business opportunities" if there are any fields in which they could apply their comprehensive strengths including human capital, technologies, and capital to solve the issues.

We agree with the idea of "tackling issues (risks) and utilizing them in business" and are striving to reduce environmental burden and other risks resulting from the TOK Group's activities with SDGs as guidelines. At the same time, we also focus on the development of new products/technologies that may lead to creation of new social value by utilizing our cultivated technological capabilities.



R&D site including open innovation

TOK Group's central laboratory equipped with a super clean room designed for the development of the next-generation miniaturization products. It has facilities and equipment to conduct study from basic research to open innovation that may lead to development of cutting-edge products and technologies.



TOK Technology and Innovation Center (TTIC)

Ascertain risks and opportunities 1

TOK strives to reduce its environmental impact and improve the efficiency of its production system through a centralized management system at all sites.

The TOK group has identified 'preservation of the global environment for future generations' and 'supply chain sustainability' as key issues (materiality) towards TOK Vision 2030 (p. 9), and promotes initiatives such as 'proper management of chemical substances' and 'carbon neutrality' in cooperation with suppliers.

■ Appropriate management of chemicals : All sites implement production activities in accordance with ISO 14001 environmental management. Responsible Care activities ensure the proper management of chemical substances throughout the supply chain.

■ Toward Realization of Carbon Neutrality:TOK strive to accurately assess the environmental impact throughout the supply chain, and promote further energy savings in manufacturing facilities, equipment and logistics, as well as the greening of electricity at our main sites.

Responsible Care activities

Japan Chemical Industry Association
<https://www.nikkakyo.org/>

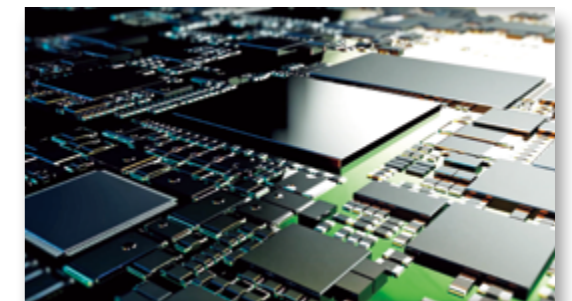


Ascertain risks and opportunities 2

Holds the world's top class in photoresists for "power semiconductors" that enhance energy-saving effects

Power semiconductors are used to control integrated circuits (LSI), which is the brain of a PC, to control motor driving and battery charging of the products incorporating LSI, and the improvement in its performance enhances energy-saving effects.

The TOK Group also develops and supplies its own photoresists (for g-line and i-line), which are indispensable for these semiconductors, which are said to hold the key to EV innovation. The TOK Group's core technologies, such as high purity and microfabrication, play an important role in raising the environmental value of end products "behind the scenes" in this way.



Message from the President

Aiming to become
a “100-year company”
that truly contributes to society
with the power of chemistry.

It was in 1976 when a U.S. space probe made a soft landing on Mars which is 75,280,000 km away, 196 times farther than the moon, and sent detailed data, including its geological condition, temperature, and living organism, to the earth. Unfortunately, the existence of Martians was not confirmed, but we were once again thrilled by the wonder of the “Power of Science” following the moon landing by Apollo 11 in 1969.

TOK's photoresist “OSR” was used in manufacturing the superhigh frequency semiconductor device installed in the probe named “Viking 1.” The product was developed on the request from a government research institution and received a famous prize in chemistry for realizing a resolution of 1 μ m, which was astounding at that time, but was never commercialized because of its extremely high price.

The Spinless coater, commercialized by TOK as one of the LCD manufacturing equipment in 2003, was an innovative product capable of reducing the amount of photoresists used to one-third of the traditional equipment. We developed the product knowing that the shipments of photoresists would decline as we put priority on meeting the customer's request to cut costs.

5G communications which realize high-speed, high capacity, low latency, and multiple simultaneous connections may be able to eliminate regional disparities in education, healthcare, and welfare, among other things, with its advanced remote-control functions. Furthermore, in a society where everything, including smartphones and other mobile devices as well as cars, home appliances, and industrial machineries, is connected via communication networks, “big data” collected from all sorts of places may become a “key” to unlock a new future. As semiconductors are the brain of such technology, higher performance is required more than ever, and higher expectation is placed also on photolithography, a “key” to manufacturing of semiconductors.

We believe what we need to meet such expectation is corporate efforts to cultivate technological capabilities step by step and the “strong desire” to want to “contribute to society through chemistry.” The TOK Group aims to become a “100-year company” that truly contributes to society by sharing these values with all employees and inheriting DNA since its founding that seeks to “develop technologies that no one can imitate although it is difficult” under frank and open-minded corporate culture.

President and Representative Director

Noriaki Taneichi



Corporate Outline



Company Name : TOKYO OHKA KOGYO CO., LTD.
Established : 25 October 1940
Headquarters : 150 Nakamaruko, Nakahara-ku, Kawasaki, Kanagawa 211-0012 Japan
Paid-in Capital : ¥14,640,448,000 (as of 31 December, 2023)
Accounting Period : January 1 to December 31
Number of Employees : 1,877 (Consolidated/fiscal year ended 31 December, 2023)
*Excluding seconded employees and contract workers

Executives & Corporate Auditors

The Board of Directors

Representative Director, President	Noriaki Taneichi
Director	Harutoshi Sato
Director	Yusuke Narumi
Director	Kosuke Doi
Director	Hiroataka Yamamoto
Outside Director	Ayako Ikeda

Directors, Who Are Audit and Supervisory Committee Members

Director (Standing Audit and Supervisory Committee Member)	Nobuo Tokutake
Outside Director (Audit and Supervisory Committee Member)	Noriko Sekiguchi
Outside Director (Audit and Supervisory Committee Member)	Kazuo Ichiyanagi
Outside Director (Audit and Supervisory Committee Member)	Hisashi Ando

Officers

Chief Executive Officer	Noriaki Taneichi
Senior Managing Executive Officer	Kosuke Doi
Managing Executive Officer	Gitae Kim
Executive Officer	Yusuke Narumi
Executive Officer	Hiroataka Yamamoto
Executive Officer	Okikuni Takase
Executive Officer	Shoji Otaka
Executive Officer	Yuichi Honma
Executive Officer	Shinichi Isogai
Executive Officer	Motoko Samezawa
Executive Officer	Tsukasa Honkawa
Executive Officer	Naoki Watanabe
Executive Officer	Kazuyuki Shiotani
Executive Officer	Atsushi Sawano
Executive Officer	Katsumi Ohmori
Executive Officer	Naoki Tatsuno

(as of 28 March, 2024)

Global Network

Sites in Japan

- TOK Technology and Innovation Center (TITIC)
1590 Tabata, Samukawa-machi, Koza-gun, Kanagawa 253-0114
TEL. 0467-75-2151 (Rep.)
- Shonan Operation Center
7-8-16 Ichinomiya, Samukawa-machi, Koza-gun, Kanagawa 253-0111
TEL. 0467-74-2125 (Rep.)
- Koriyama Plant
1-23 Machiikedai, Koriyama-shi, Fukushima 963-0215
TEL. 024-959-6911 (Rep.)
- Utsunomiya Plant
21-5 Kiyohara Kogyo Danchi, Utsunomiya-shi, Tochigi 321-3231
TEL. 028-667-3711 (Rep.)
- Kumagaya Plant
823-8 Kamibayashi, Miizugahara, Kumagaya-shi, Saitama 360-0844
TEL. 048-533-1171 (Rep.)
- Gotemba Plant
1-1 Komakado, Gotemba-shi, Shizuoka 412-0038
TEL. 0550-87-3003 (Rep.)
- Aso Plant
4454-1 Miyaji, Ichinomiya-machi, Aso-shi, Kumamoto 869-2612
TEL. 0967-22-4411 (Rep.)
- Distribution control center
4-1-1 Kamigo, Ebina-shi, Kanagawa 243-0434
TEL. 046-235-2821 (Rep.)

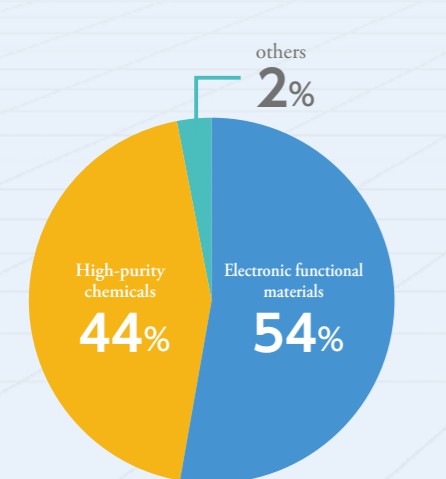
Overseas offices

- TOKYO OHKA KOGYO CO., LTD. Singapore Office
8 Eu Tong Sen Street, #21-91, The Central, 059818, Singapore
TEL. +65-62261485
- TOKYO OHKA KOGYO CO., LTD. Europe Branch
Polarisavenue 11, 2132 JH Hoofddorp, The Netherlands
TEL. +31(0)23-205-2623

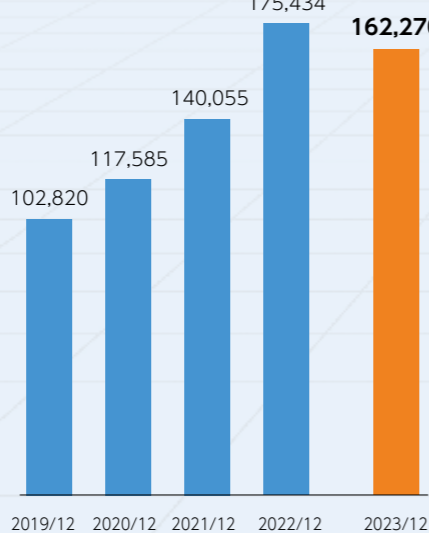
Subsidiaries and affiliates

- OHKA SERVICE CO., LTD. (Established May 1986)
150 Nakamaruko, Nakahara-ku, Kawasaki, Kanagawa 211-0012, JAPAN
TEL. 044-435-3117
Business: Insurance agent service
- TOK ENGINEERING CO., LTD. (Established October 1992)
150 Nakamaruko, Nakahara-ku, Kawasaki, Kanagawa 211-0012, JAPAN
TEL. 044-435-3113
Business: Manufacture and sales of auto chemical supply machines
- TOKYO OHKA KOGYO AMERICA, INC. (Established April 1989)
4600 NE Brookwood Parkway, Hillsboro Oregon 97124, U.S.A.
TEL. +1-503-693-7711
Business: Manufacture and sales of photoresists, and development, manufacture and sales of photoresists-related chemicals
- TOK TAIWAN CO., LTD. (Established January 1998)
4E, No.95, Beida Rd., East Dist., Hsinchu City 30044, TAIWAN
TEL. +886-3-534-5953
Business: Manufacture and sales of photoresists, and development, manufacture and sales of photoresists-related chemicals
- CHANG CHUN TOK (CHANGSHU) CO., LTD. (Established October 2004)
Changchun Road, Riverside Industrial Park, Changshu Economic Development Zone, Jiangsu Province 215537, PRC
TEL. +86-512-5264-8000
Business: Manufacture and sales of photoresists-related chemicals
- TOK ADVANCED MATERIALS CO., LTD. (Established August 2012)
45, Cheomdan-Daero 60Beon-Gil, Yeonsu-Gu, Incheon, 21990, Republic of Korea
TEL. +82-32-850-2000
Business: Development, manufacture, and sales of photoresists and related chemicals
- TOK CHINA CO., LTD. (Established January 2021)
703B, GIFC.1438 Hongqiao Road. Changning District, Shanghai, CHINA
TEL. +86-21-5840-8800
Business: Sales of photoresists for semiconductors and flat panel displays and photoresist-related high-purity chemicals
- TOKCCAZ, LLC. (Established May 2022)
1 West Deer Valley, Suite 206, Phoenix, Arizona 85027, U.S.A.
TEL. +1-623-231-7553
Business: Sales of photoresists for semiconductors and photoresist-related high-purity chemicals in United States

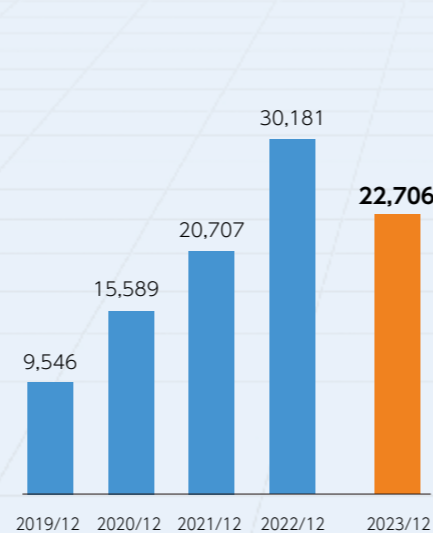
Net Sales by Business Segment



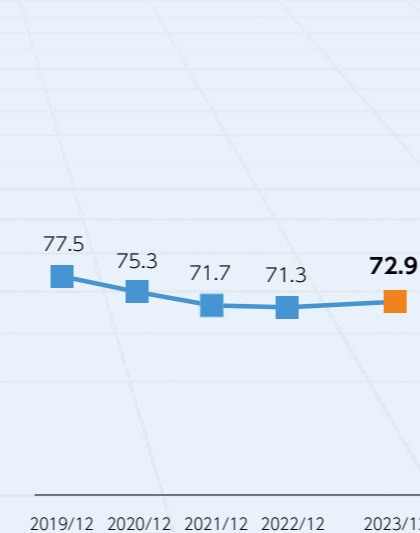
Net sales (Millions of yen)



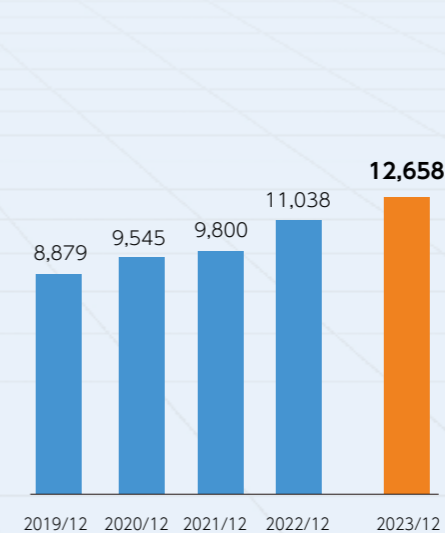
Operating income (Millions of yen)



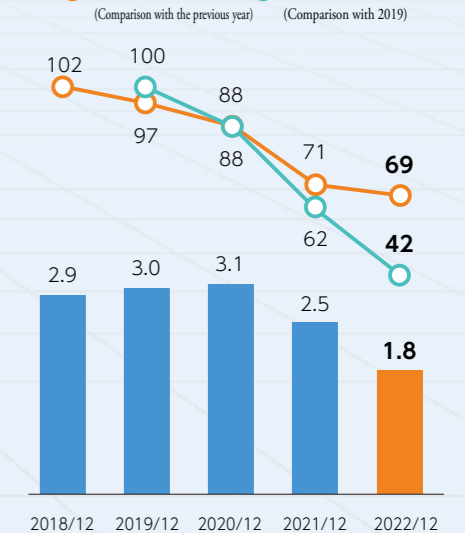
Equity ratio (%)



R&D costs (Millions of yen)



CO₂ Emissions (10,000t-CO₂)



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TOKYO OHKA KOGYO CO., LTD.

150 Nakamaruko, Nakahara-ku, Kawasaki-shi, Kanagawa, 211-0012, JAPAN
TEL.+81-44-435-3000 (Rep.)

<https://www.tok.co.jp/eng>